

Version 1.0



**General Certificate of Education
June 2010**

Health and Social Care

HC13

Final

Mark Scheme

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Question 1

- 0 1** Ref to VO_2 max as a measure of **aerobic** fitness (1) being the maximal/max oxygen uptake (1) and use in cells/cellular respiration AW (1) measured in millilitres/ml per minute/min (1) per kilogram (of body weight) (1) max 4
(4 marks)
- 0 2** Ref to regular exercise will help improve Marcus's VO_2 max by increasing surface area of the lungs/lung capacity/take in more oxygen AW (1) allowing for greater oxygen diffusion or description (1) increased carrying capacity (of the blood) to transport oxygen (1) more effective cellular respiration/energy release AW (1) (4 marks)
- 0 3** Ref to stamina as endurance/ability to sustain work/keep going AW (1) without fatigue/tiring/muscles tiring (1) (2 marks)
- 0 4** Reference to **Maximum strength** (1) as the greatest force possible (by neuromuscular system) (1) in a single (voluntary contraction) (1) **Dynamic strength/power** (1) is the ability to overcome resistance (1) using high speed muscular contractions e.g. when throwing/jumping/sprinting (1) (6 marks)
- 0 5** Ref to flexibility being the ability to stretch/range of movement AW (1) of the whole body/around a single joint (1) allowed by (accept any 2 of the following): ligaments/tendons/muscles max 2 (4 marks)

Question 2

- 0 6** Ref to regular exercise promoting a positive mental attitude AW (1) developing (self)-confidence (1) promoting a 'feel good' factor AW(1) as a result of endorphin/enkephalin/chemical release/mood enhancing (1) form nerve endings/in the brain (1) (4 marks)

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- 1) Ref to regular exercise suppressing appetite/lowering risk of overeating/and subsequent weight gain/as individual less stimulated psychologically/by smell, sight, taste of food/controlled by appetite/in hypothalamus in brain/receiving information from the blood.
- 2) Energy equation/input from food/output from energy used in exercise/shifted to the right – achieves a negative balance or maintains balance
- 3) Exercise increases metabolic rate/which uses up Carbohydrates – Sugars – Starches/stored as glycogen/connected to glucose/to supply the energy/for muscle contractions. Fat also used/as triglycerides/converted to free fatty acids/so body fat reserves reduced.

Mark Range

0

No response worthy of credit

1-3 marks

Answers covering 1 or 2 areas only. Answers will be vague and repetitive with little use of technical terminology. There are likely to be technical errors demonstrating lack of understanding.

4-6 marks

Answers cover 2 or 3 areas in good detail. Some details using appropriate technical terminology. There may be some technical errors.

7-8 marks

Answers are well structured using appropriate terminology, covering all 3 areas in good detail, logically and coherently.

(8 marks)

0 8 Answers are likely to cover how warming-up prepares the body system and organs for exercise. Points covered are likely to be physical effects in terms of preventing injury and muscle soreness, gently raising the pulse, increasing cardiac output and stroke volume AW, increased ventilation rate AW, increasing oxygen delivery to muscles, helping to reduce oxygen deficit, increasing muscle temperature, dilating blood vessels in muscles, raising cellular respiration and metabolism, increasing muscle flexibility and mental effects in preparing the mind for the task ahead.

Mark ranges

0 marks

No response worthy of credit

1-3 marks

Only 1-3 points made in little or any detailed reasoning. Answers will show some relevant knowledge but will be brief and vague, possibly repetitive. There will be a general lack of physiological detail. There will be errors in spelling, punctuation and grammar.

4-6 marks

Covers 4-6 points in some detail and reasoning. Answers will be reasonably coherent but may lack precision and reasoned showing generally good knowledge of how warming-up benefits the body organs and systems. Physiological detail will be mainly accurate with some omissions. There may be errors in spelling, punctuation and grammar.

7-8 marks

Covers at least 7 points in good detail and well reasoned. Answers will be coherent and well-structured demonstrating a very good understanding of how warming-up prepares the body organs and systems. Physiological details will be accurate with few if any omissions. Spelling, punctuation and grammar will be good.

Candidates who deploy appropriate knowledge and understanding and display higher QWC skills should be rewarded at the top of the mark band

(8 marks)

Question 3

0 9 Ref to all three adults find exercise demands little effort in first minute/minutes (1) effort for all three increases throughout the exercise period/8 mins (1) highest level of effort highest for all three at 8 mins/1st minute (1) pattern of increase for Adults A and C is similar (1) Adult B appears to increase effort more quickly/bigger increments than A or C (1) may suggest B less fit than A/C (1) Allow numerical comparison e.g. A/C – 7 point rise over 8 mins/ cf B 9 point rise over 8 mins (1) Allow recognition that data for A-C may represent differences in fitness (1) Allow points made re subjectivity of data if valid (1) No marks for reiterating data from the table.

(6 marks)

1 0 Strength – can be used to show progress/give overall perception of effort not one aspect (1)
Limitation – are subjective/individuals vary/perceptions do change over time (1)
(2 marks)

1 1 Ref to peak flow as the maximum rate/speed of air flow(1) out of the lungs/exhaled(1) after full inspiration/large breath(1)
(3 marks)

1 2 Ref to using a disposable sleeve (1) setting arrow/gauge to zero (1) seal/closing mouth over mouthpiece (1) producing a single (1) hard(est) possible exhalation AW (1) recording arrow/reading from scale (1) Allow equivalent points for use of a spirometer with kymograph.
(5 marks)

1 3 Allow 400-710 (1) dm³ or L or litres/minute/min (1) Allow single value within the range.
(2 marks)

1 4 Strength – objective measure/portable/simple to use/useful re asthma/show progress (1)
Limitation – only measures one aspect of lung function/fitness AW (1)
(2 marks)

Question 4

1 5 Ref to Sheila exercising (alone) at home (1) finding a low level/beginners class (1) exercise with a friend (1) Allow walking
(2 marks)

1 6 Ref to costs/example (1) work/family commitments/time constraints (1) inconvenient facility locations (1) cultural attitudes
(3 marks)

1 7 Ref to Sheila may meet people when exercising/interacting AW (1) interacting in a variety of new/different ways (1) make new friendships/relationships (1) help maintain existing friendships Develop social skills/communication skills AW
(3 marks)

1 8 Ref to heart disease(s) AW (1) stroke AW (1) type 2 diabetes (1) diseases linked to obesity (1)
(3 marks)

- 1 9** Relevant points may include – genetics may make some individuals more at risk of developing certain diseases and disorders
- lifestyle factors/choices also affects level of risk
 - regular exercise benefits relating to lung capacity/cardio vascular functioning
 - reducing risk of atherosclerosis AW/blood cholesterol/weight loss
 - increasing metabolic/respiratory rate using up sugar/maintaining blood sugar levels/ however some risks of damage due to overexertion/'addiction' to exercise
 - individuals vary – no prevention of disease/disorder guarantees

Mark Range

0

No response worthy of credit

1-3 marks

Candidates here will produce generally vague responses lacking in both depth and detail e.g. mentioning 1 possibly 2 of the diseases or disorders with little physiological detail. For 3 marks should include at least three different points of relevance albeit in limited detail. There will be errors in spelling, punctuation and grammar with little appropriate use of technical terminology.

4-6 marks

Generally candidates will produce more detailed responses. For 5/6 marks covering 2 of the 3 diseases/disorders in some detail and using appropriate technical terminology. Answers will be organised but lack precision. There may be errors in spelling, punctuation and grammar.

7-9 marks

Top band answers will be very detailed covering all 3 diseases/disorders. For 9 marks there will be very good physiological detail and use of technical terminology throughout e.g. relating to atherosclerosis and LDL levels in heart disease. Spelling, punctuation and grammar will be very good.

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(9 marks)